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POLITICAL AND SOCIOLOGICAL

THE MOTIVES OF THE 'GANG OF FOUR'

Peking KUANG-MING JIH-PAO in Chinese 18 Mar 77 p 2

[Article by Hsiao Hung and Ko Yang, General Logistics Department: "The Motives of the Bandits"]

[Text] Most bandits have the heart of a bandit. Regardless of the mask they wear, the costume they don, or the cunning words they spew out, they are incapable of changing their crafty and hypocritical hearts. As for the psychology of a bandit, the analysis of a single repulsive act by the adventurist Chiang Ch'ing makes that immediately understood.

Late one night in June 1962, Chiang Ch'ing scurried to one of the hideouts of Lin Piao's gang in the General Logistics Department to "observe." Posturing, gesturing and arguing grandly, she deliberately put on a false show of loathing. When she saw a large color photograph hanging on one of the gang's walls, she immediatley frowned and said coyly: "I really don't like looking at that, do you mind if I mark through it with an X?" Saying this, she swaggered out. Later on, without even waiting for workmen to cross out the picture, Chiang Ch'ing sent someone to steal it. Why was this? Because that photograph was one that Chinag Ch'ing herself had made for Lin Piao's gang.

Chiang Ch'ing and Lin Piao were jackals from the same lair all along, working in collusion and getting along famously. However, after Lin Piao was killed at Wen Tu Er Han, Chiang Ch'ing did an about-face, changing so that it appeared as if she had been persecuted by Lin Piao, unabashedly declaiming, "Lin Piao made me suffer so much, keeping me confined for a month, deaf in both ears..."

Thus we see the psychology of a bandit: with fear in his heart, he is extremely feeble. As the saying goes: The thief has a guilty conscience.

Chiang Ch'ing is not just a run-of-the-mill bandit, she is a great state-stealing thief who conceals a black heart by wearing a red hat. What she wanted to steal wasn't pearls and agates, gold or riches. What she drooled over morning and night was party power, military power and political power. Futhermore, whether one is a petty thief or a robber baron one is still a

"bandit," so they both have one characteristic in common: a guilty conscience. Thieves inevitably have guilty consciences. Why is this so? One, their plots to usurp party power are a violation of Marxism-Leninism and the thoughts of Mao Tse-tung, as well as a violation of the objective laws of historical development. Although they create many rumors and bathe themselves in a thick layer of protective coloring, they are still guilty and cowardly, fearing all the time that the plots may be uncovered; two, the plots and intrigues that they hatch up are contrary to the feelings of the people, the party and the army, and are extremely isolated. Although they put on supercilious airs, they are in fact in constant fear of falling into the vast sea of the people's criticism; third, "the gang of four" is well aware that "bandits," big or small, old or new, at all times in all places have each been taken to trial, so as soon as they associate this with their own fate it becomes difficult to avoid fear and trembling.

Although the bandits have guilty conciences, they still manifest an outward appearance of "righteousness." Did not Chiang Ch'ing suggest "crossing through it with an X" when she saw the color photograph that Lin Piao's gang had? This was an empty show put on to cover up a guilty conscience, and it is fitting that it exposed their extreme weakness. Recall that year when Hu Feng and his buddies organized an underground independent kingdom, adopting all kinds of despicable methods in dark corners to oppose communism and the revolution, how blatant their arrogence was. Yet they were always like a "young daughter-in-law," forever in fear of being beaten, with terror in their hearts. Compared to Hu Feng and his counterrevolutionary bloc, Chiang Ch'ing and her friends, with their counterrevolutionary ambitions, their sinister and treacherous methods, their shamelessness, and their disastrous results for the country and the people, were far larger, making the rebels and collaborators of all times and places pale by comparison. Even so, they were unable to control their sick consciences, and feeling myriad pairs of eyes observing them and myriad pairs of hands pointing at them angrily, they were in constant fear. Chiang Ch'ing used to scream everywhere: "The old woman isn't afraid!" "I am afraid of nothing!" But as it turns out, her so-called "fear of nothing" was actually a cover-up of her internal "fear of everything." This state of mind of the "gang of four," in which they had the guilty consciences of thieves but still tried to put on a bold front, was prolonged right to the moment of their collapse. At that point their guilt and the frenzied beating of their hearts reached a peak. There were forged wills, armed rebellions and other wild acts. Nevertheless, what was in store for them was a disgraceful and total extinction.

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HOW 'GANG OF FOUR' CONSPIRED TO USURP LEADERSHIP IN ARMY

Peking KUANG-MING JIH-PAO in Chinese 24 Mar 77 p 4

[Article by Li Shih: "The 'Gang's' 'Historical Experience' in Opposing the Party and Usurping Leadership in the Army"]

[Text] During the campaign against Lin Piao and Confucius, Lo Ssu-ting and Liang Hsiao, the imperial tools of the "Gang of Four," used the pretext of summing up the historical experience of the struggle between the Confucianists and the Legalists to carry out their "help the entire world" usurpation of party power, summing up the "historical experience" of counterrevolution.

They had great praise for Wu Tse-t'ian's methods, such as instructing the people and officials to "make self-recommendations and requests to be an official," using "summonses" and appointments to "reward, accuse and expose," and proclaiming that "mere words may be fit for imperial decrees." At the same time, they especially extolled Wu Tse-t'ian for "gathering a group of 'literati' who could enter and leave the palace directly through the north gate, letting them 'take part in governmental decisions, in order to weaken the minister's power.'" They felt that this group of "north-gate scholars" played a very significant part in Wu Tse-t'ian's political innovations." They followed the same prescription, gathering together a handful of people and the means to control public opinion, arrogating themselves over Chairman Mao and the Central Committee of the party, openly issuing orders and instructions to the whole party and country and playing the tyrant, very much in the style of those "north-gate scholars" of other years.

They were well aware that reliance on "literati" alone was not enough to attain the goal of usurping party power, it was necessary to control military power as well. Therefore, they once again went to the pile of old paper to look for "experiences" in upsetting the army and grabbing power. Thereupon, in a secret group under the name of Lo Ssu-ting, they wrote a sinister essay entitled, "Critique of the Western Huai Victory -- Reading 'The Biography of Li Su in Old Tang Documents.'" Why did they care so deeply for the commander Li Su from the old time of the emperor Hsuan-Tsung

of the Tang? Because Li Su was a leader of soldiers, and especially because he had received military power from the hands of an aging former commander, therefore he was very useful in an article for usurpation of military power. For the sake of the article, the battle of Western Huai naturally had to be included within the scope of the "Confucian-Legalist struggle," so they cleverly capped Li Su, who upheld the old system and was filial in mourning for his departed parents, who "acted with constancy, was frugal and did not offend propriety" with a "legalist" crown, starting the struggle with the "Confucianists." It just so happened that Li Su's predecessor had suffered one defeat after another in the Western Huai campaign, which could be capitalized on at this point. It is said that after Li Su took the reins of military power from the old commander, he "inspected the encampments and penetrated the ranks deeply. He carried out a policy of 'treating the soldiers with honesty' within the army." Thereby he "united the troops and reassured the army." Furthermore, Li Su "assembled the local people to organize a new army." This "new army" "acted as the backbone on the front lines of the Western Huai." They were probably very satisfied with the writing of this discussion. Unfortunately, with the single exception of the record in the history books of "treating the soldiers honestly," the rest, when it is not merely fanciful speculation, is made out of whole cloth. The details concerning "assembling the local people to form a new army" which "acted as the backbone" are particularly strange fabrications. From this it is obvious that the secret of the "Gang of Four" in studying history was to stop at nothing to attain their ends. When it was necessary for them, they were fierce and ruthless in fabricating history. Has not Chiang Ch'ing on many occasions scurried to the troops to "inspect the camps?" Did she not congratulate, grant interviews, join in group pictures and versify? Has she not put on a face of "treating the soldiers with honesty," recklessly trying to ensnare the allegiance of the army to usurp the power of the military? Did they not want to "reform the militia," and make "secondary armaments," which was a reckless attempt to organize a counterrevolutionary "new army" to act as the "backbone" in a counterrevolutionary camp? We get a glimpse of all this from the way they "molded" Li Su. Yet they were still afraid that readers would not fathom its subtlety, so they gook care to point out that "the victory of the Western Huai was a military-line victory by the Legalist line over the Confucian line," that the "debate" engendered by the struggle between these two lines "continued nearly 1000 years," and was "prolonged, intricate, and recurring." Moreover, they tell people that "today" they still "must pay attention to this point." But what sort of things are they doing in "today's struggle?" They slanderously claim that "what the military is carrying out is not the proletarian revolutionary line of Chairman Mao," that it is a "black line," screaming, "we must set fires to clear away the weeds," "we must straighten out the army," and "we must make a military committee rebellion," etc. They recklessly scheme to upset the army and usurp power, which is their despicable goal.

During his lieftime, the great leader and teacher Chairman Mao directed serious criticism at the "Gang of Four" "helping the entire world:" "We must work at Marxism-Leninism, not revisionism; we must unite, not split; we must be frank and righteous, not carfty and plotting. We must not create gangs-of-four, and if you do not intend to do so, why are you acting in this fashion?" But the "Gang of Four" ignored the criticism directed at them by Chairman Mao and increasingly continued to form gangs for personal gain and to take over the party, resulting in nothing more than raising a great stone only to smash one's own feet, ending in shameful defeat.

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'GANG OF FOUR' LIKENED TO BUTCHERS, SWINDLERS

Peking JEN-MIN JIH-PAO in Chinese 20 Mar 77 p 3

[Article by Ch'en Tse-shu, Mass Work Office, Political Department, Hainan Military District: "The Covers and Assistants of the 'Gang of Four'"]

[Text] In one set of material, there are three group photographs of the "Gang of Four" and their confidantes. Although the backgrounds of these three group photos are different, they do have one point in common: the head personage of the "Gang of Four," Chiang Ch'ing, is always standing in the middle of a straight line arrangement; they are all linked together arm in arm; and they are always holding a volume of"Quotations from Chairman Mao"clasped to their breasts. That dignified pose, grand air, and righteous brotherly attitude leap out of the page. This does not prevent us from thinking of Lu Hsun's words: "Friendship is one of the five constants and moral exchange is a virtue of mankind--of course this is excellent. But a swindler has a cover and a butcher has an assistant; they call each other 'friends' too."

The "Gang of Four" were swindlers, so they too had covers. They were clearly a bunch of bourgeois careerists and plotters who did not read Chairman Mao's works, did not heed Chairman Mao's words, and wantonly tampered with Marxism-Leninism and Mao Tse-tung Thought, yet they even had their pictures taken holding the"Quotations from Chairman Mao"in their hands and exerted all efforts to have themselves depicted as the "lofty" images of "unwavering faith in Marxism-Leninism". Isn't that perfectly ridiculous? But it is not all that strange, because this"Quotations"is nothing but a cover set up by them. This cover is not just limited to the"Quotations"in the photo. Chiang Ch'ing is a murderess who persecuted Chairman Mao in every way, but she wanted to place a wreath with "student and comrade-in-arms" written on it at the side of the great leader's remains. This was another cover. Of course, besides this there are those covers which people know so well: "Marxist-Leninist theorist," "standard bearer of the revolution in literature and art," and "representative of the correct line," one is not enough. "A pretty name does not necessarily contain a pretty virtue." The "Gang of Four" grabbed these magnificent looking covers to create a number of

false images to confuse people, cheat the world and steal a good name for themselves, and then working behind this cover to carry out revisionism in a big way, engage in splits and carry on intrigues.

The "Gang of Four" were also butchers, so they needed assistants. That photo of them linked together is evidence that they colluded at an early stage, formed themselves into a system, made use of each other, and plotted evil together. Their various courses of action also explain this kind of relationship of theirs. For instance, Chiang Ch'ing proclaimed emphatically: "Not to heed what I say is not to heed the Party." Immediately Chang Ch'un-ch'iao emphasized: "We must definitely act on Chiang Ch'ing's words," otherwise "it would be a question of our attitude towards the proletarian headquarters." When Chiang Ch'ing ennobled herself as the "meritorious person of the Great Cultural Revoltuion," Yao Wen-yuan immediately praised and flattered her: "Chiang Ch'ing lit the brilliant torch of the Great Proletarian Cultural Revolution." The "Gang of Four" was like this among themselves and with their confidantes. For instance, when the "Gang of Four" wanted to strangle the "Song of a Gardener," Ch'u Lan immediately tossed up "For Which Educational Line Is This Paean Sung?"; when Chiang Ch'ing wanted to be "empress," the circle of Liang Hsiao and Lo Ssu-ting set up a big close clamor praising Wu Tse-t'ien, making a big deal of her as the "Lu [0712] Empress"; when the "Gang of Four" wanted to overthrow Premier Chou, they edited history and talked up "criticizing the [imperial] prime minister"; when the "Gang of Four" wanted to oppose Comrade Hua Kuo-feng, they brought up this stuff about Confucius acting as prime minister from Ssu-k'ou [0674 1379] in the year he was 56 years old. When the "Gang of Four" wanted to overthrow a large number of veteran cadres who had followed in Chairman Mao's revolution for decades, the circle of hitman Chang T'ieh-sheng sneaked away from the top and jumped out below, barking wildly, babbling that the veteran cadres = democrats = bourgeois roaders. For the past few years, the "Gang of Four," this gang of butchers, instigated, manipulated, and directed these assistants to strangle the activism of the broad masses in engaging in socialism in a big way, destroy excellent literary and art works, and persecute revolutionaries who are faithful to Chairman Mao and the Party. The "Gang of Four" and their confidantes and hitmen, although they all bragged that they were revolutionary "leftists," in reality their relationships among themselves were entirely those of swindlers and covers, butchers and assistants. That is all there is to it!

But the "Gang of Four" were not merely the same as swindlers rushing around here and there conning people out of their wealth, or butchers murdering people and relieving them of their goods. Their appetite was much greater. They shouted out loudly: "Now is a time of dynastic change." Chiang Ch'ing expounded solo with hardly a shred of concealment: "A woman can also be emperor." The original purpose of the "Gang of Four" in setting up screens and bringing in assistants was to realize their dream of seeking a gang [or help] everywhere. They wanted to seize the "empire," they wanted to carry out a "dynastic change," and they wanted to have a "woman emperor."

The "Gang of Four" were high level swindlers and butchers, major brigands who plotted to disrupt the army, usurp the Party, and steal the country; they were big butchers who sought with all their might to hack to death socialism and the dictatorship of the proletariat.

The "Gang of Four," making use of their cloaks and assistants could hold rein for a while, could do their evil for a period, but "where there's a fox, its tail must eventually show." You cannot destroy the truth, and the people cannot be deceived. People saw the traces of their mischief early and counted on their downfall. The Party Central Committee headed by Chairman Hua Kuo-feng, carrying on Chairman Mao's legacy, adopted brilliant and decisive measures to shatter the plots of the "Gang of Four" to usurp the Party and seize power, and did it in one fell swoop. Every one of their screens was broken through by the tide of wrath of the masses of the people, and the true form of the "Gang of Four" as swindlers and butchers finally was exposed to the broad daylight.

The "Gang of Four" has been shattered. Their group photographs remain. It has become an uncommon teaching material by negative example for people to pick out swindlers and screens, butchers and assistants.

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CSO: 4005

ECONOMIC

NEW LOOK ALONG THE TUNG-LIAO RIVER

Hong Kong CHUNG-KUO HSIN-WEN in Chinese 27, 28 Dec 76

[Article by Lin Ping (2651/5493)]

[27 Dec 76 pp 21-22]

[Text] The Tung-liao (2639/6697) river in southern Kirin is the second longest river in the province. 405 kilometers in length, it flows along the Szeping area, in the heartland of Sung-liao plain, passing through Tung-liao, Liao-yuan, I-tung, Li-shu, and Huai-te municipalities and prefectures.

With broad expanse of rich farmland, the Sung-liao plain yields in abundance rice, soybean, corn, and kaoliang. Rice fragrance floats in the air and factories bristle like forests along the banks of the Tung-liao river. This is a region in Kirin of good industrial and agricultural development. In late autumn, we traveled along the Tung-liao river and witnessed the excellent situation there of brisk development of industrial and agricultural production.

We went by car to the origin of the Tung-liao river, the Liao-ho-yuan (6697/3109/3293) Commune in Tungliao Prefecture of Kirin. Along the way, we saw the rolling semi-mountainous area extending from the Changpai range covered with evergreen pine and cypress trees, and wave after wave of layered terraced farmland, while the Liao river ran like a belt floating to the depth of the land.

After climbing over a small hill, we came upon a water conservation worksite where red flags fluttered and men rejoiced in work. Single-handed or in pairs, they removed earth by bamboo baskets, while trucks and tractors crisscrossed back and forth, punctured by sounds of hammers from the quarry. What a magnificent picture it was of a resounding battle fought against the Liao river.

Comrade Li Ko-chi (2621/4430/0679), a cadre from the Szeping District Agricultural and Forestry Office who accompanied us on the visit, pointed

out that this was the Tungliao Prefecture in the upper reaches of the Tung-liao river. People of the whole prefecture were engaged in improving the Liao river according to an overall plan for the region. In compliance with Chairman Mao's teaching: "Water conservation is the lifeline of agriculture," the broad masses of commune members resolved to perfect the Liao river and to raise even higher the red flag of learning agriculture from Tachai.

The Tung-liao river was a disaster before the liberation, when people along the river suffered inundation 9 years out of 10. After the liberation, people along the river banks vigorously promoted capital construction of farmland, applied scientific methods of cultivation, and brought forth fundamental changes along both banks of the river. They built in succession 520 water reservoirs such as Erh-lung-hu (0059/7893/3275), as well as many flood prevention, drainage, irrigation, power generation, and water and soil conservation projects, to change 13 million mou of land into good farmland. Tung-liao river, however, had not been fundamentally controlled, as lands along both banks were often menaced. In 1975, encouraged by the spirit of the National Conference to learn from Tachai, the people in the five municipalities and prefectures of Tung-liao, Liao-yuan, Li-shu, Huai-te, and Shuang-liao took another step forward to launch the campaign for thorough control of the Tung-liao river. Along river banks extending 100 kilometers, 160,000 civilian workers and nearly 20,000 vehicles of all descriptions joined the campaign. Among the great troops to control the river were lively youngsters, heroic girls, and also aged poor peasants who suffered immensely from water calamity caused by the Liao river. Now, the first phase of the construction project has been successfully completed. Opened on level ground is a new river channel of 85 meters in width and a total of 120 Chinese li in length, thus enlarging the flood water flowing capacity of the main river channel. At the time, it also served to increase and expand water paddies by 12,400 mou.

At Liao-ho-yuan Commune, Comrade Tien Keng-yun (3944/5087/5089), Deputy Secretary of the Party Committee, warmly received us and spoke to us on the changes in the Ta-chia-shan (1129/2665/1472) brigade.

Before the liberation, flood water erosion in Ta-chia-shan transformed large tracts of good farmland into sand piles. After the liberation, people here piled stones on top of Ta-chia-shan to build dikes, dug holes to plant trees, and carried earth to improve the soil. They also built terraced famland on otherwise waste hillside, constructed stone dams to prevent flood, opened ponds for storing water, planted protective tree belts, and improved 281 gullies. During the last 20 years, the Ta-chia-shan people have never ceased their efforts to control the mountain, and eventually changed the appearance of the waste and barren mountain ridges. Now, the Ta-chia-shan brigade is an advanced unit in the control of mountain land and water in Kirin, and a model in Szeping district in learning agriculture from Tachai.

While explaining all this, the hospitable host also brought us to the top of Ta-chia-shan where a scene of prosperity unfolded before us. On the slopes, red apples, purple grapes, and tender peaches were ripening on branches to add bright colors to the mountain sides of Ta-chia-shan, and to float rich and alluring fragrance in the autumn wind. Young men and women were busy picking fruit under the direction of a hale and hearty old man. Secretary Tien told us that the old man was a native specialist in mountain and water control, known as Tai Hsi-lu (2071/0823/4389), the "Old Yu-kung." As we approached him, the old man with ruddy complexion and youthful spirit pointed to fruit baskets awaiting transportation and said, "Come, try something fresh first!" He then presented us with the fruits. He commended: "Before the liberation, Ta-chia-shan was a destitute mountain where men and birds alike were afraid to pass, for it was difficult to get drinking water here, much less fruits. Now, Ta-chia-shan has changed. After the Great Cultural Revolution, the life of commune members has improved even further, step by step."

After leaving Ta-chia-shan, we drove over 200 li and came to Erh-lung-hu amid mountains. We then went to Kou-shan (7237/1472) commune in I-tung prefecture on the northeast bank of Erh-lung-hu.

Kou-shan commune in I-tung prefecture is located in a semi-hilly region, low in the south and high to the north, adjacent to the lake. The cultivated land in the south is mostly low land. In the past, the land was hard in dry weather and waterlogged during rain. In the north, the cultivated land was mostly rock. Before the liberation, the poor peasants here, besides suffering from Japanese imperialist control, oppression by Kuomintang reactionaries and exploitation by landlords and money lenders, also endured the menaces of mountain and water in absolute misery. After the liberation, under Chairman Mao's leadership, the Kao-shan people vigorously promoted capital construction of farmland and thoroughly changed their living conditions. They have now planted trees all over the waste and barren mountain ridges, built contour terraced farmland on the slopes, opened trenches in low and often inundated farmland, and transformed gullies and ponds into water paddies and terraced farms. In the past, Kao-shan was a huge waste land. Now, trees have formed forests on the mountain, hilly lands have become level, and water has become useful for producing rice and provisions. The features of mountain and water have changed year after year, and food output has increased day after day. In 1974, the average output per mou was 820 catties, exceeding the per mou output target stipulated by the "National Agricultural Development Program" for areas south of Changchiang. In 1975, the average output per mou was 970 catties, an increase by more than four times greater than that of before the liberation.

[28 Dec 76 pp 20-21]

[Text] There is, in the mid portion of Tungliao river, a lake called Erh-lung-hu (0059/7893/3275). After the liberation, the Erh-lung-hu water

reservoir has been built here. This large water reservoir can hold surplus water from 15 large and small rivers in the upper reaches, and then discharge water into the four major irrigation districts of Nan-sui-tzu (0589/2979/1311), Chin-chia-tun (4440/1367/1470), Li-shu (7812/2885), and Shuang-shan (7175/1472) in the lower reaches. Construction of the water reservoir has enlarged the area of irrigation, increased water paddies by 318,200 mou, and also provided water for irrigating 200,000 mou of dry farmland. The water of Erh-lung-hu lake has good and nourishing quality, and serves well in keeping fish. In 1975, the people there also utilized self-flowing irrigation water to build hydroelectric power stations.

Before the liberation, the region of Nan-sui-tzu, Chin-shia-tun, Ku-chia-tzu (1324/1367/1311), and Shuang-shan suffered from heavy concentration of serious natural disasters of drought, waterlogging, salt, alkali, wind, and sand. After the liberation, thorough control has been achieved to change the region into rice producing land.

After visiting Erh-lung-hu, we came to the Nan-shui-tzu irrigation district, one of the four major irrigation districts. This irrigation district covered an area of over 100 li in each direction. The rolling water from Tung-liao river flowed into Erh-lung-ho and then, by way of the main canals of Nan-sui-tzu irrigation district, automatically irrigates over 10,000 mou of water paddies. A comrade who accompanied us pointed out: "With adequate water resources and rich soil, Nan-sui-tzu is a good place to develop rice production. As early as in the Ching Dynasty, rice had been produced here. At that time, however, rice was solely owned by the imperial household, and the area came to be known as the "land of imperial rice." It was precisely due to the fact that the laboring people suffered from oppression and also were unable to enjoy the fruits of their labor that rice production was consistently unable to gain development. After the liberation, the situation has been fundamentally changed. The government led the broad masses to strengthen capital construction of water conservation, to build strip and terraced paddies, to expand acreage of water paddy cultivation, and thus to considerably increase rice output. In order to further raise the per-acre yield, Nan-sui-tzu commune has now established an agricultural experimental farm, while production brigades have scientific experimental teams, and production teams have agricultural scientific experimental groups.

Over 600 native specialists of the whole commune have conducted experiments on 11 strains, and contributed significantly to the development of rice production.

We arrived in Ta-yu-shu (1129/2810/2885) brigade of Nan-sui-tzu commune to call on Han Shu-yen (7281/2885/1554), a peasant seed specialist. Together with members of the scientific experimental group, he was observing growth conditions of rice at their late phase at the experimental farm. Han Shu-yen told us: "As a result of listening to Chairman Mao and of persisting in practice, a crude and uneducated person like myself has become a seed

specialist." An old poor peasant and communist party member, Han Shu-yen has been engaged in rice production for many years. He is skillful in studying problems, pays particular attention to on-the-spot observations of different strains and varieties, and seeks to ascertain laws governing the growth of rice planted at different periods. Once, in a soon-to-ripen seeding farm, he discovered a stalk of a different variety and promptly devoted his attention to it. After careful observation and concentrated study, he selected the strain for replanting, and consecutively replanted this new strain. After observation through several springs and autumns, recording, and probing, he eventually mastered the habits and special characteristics of this new strain. From one stalk, he developed it to produce seven catties and two ounces, then to 1,050 catties, and again and again until it exceeded 27,000 catties. Experiments showed that this new variety yielded 10 percent more than the former variety, and 15 percent more than ordinary rice variety. It also ripened earlier and yielded better quality rice. Designated "Huai-nan Number One," the variety has been promoted for extensive cultivation.

At noon, we had lunch with the Commune Revolutionary Committee. Pointing to the snow-white rice, the host humorously commented: "Following development of agricultural water conservation and scientific experiments among the masses, we have had 10 consecutive years of bumper rice harvest, and the people have also raised their livelihood step by step. Today, we are eating rice irrigated with water from the spring of Ta-yu-shu. What was solely possessed by the imperial household before as 'imperial rice' has now become provisions for the working people."

Leaving Nan-sui-tzu commune, we came to San-tao-chuan (0005/6670/0946) brigade in Huai-te prefecture. Everywhere we saw a scene of bumper crop of fire-red kaoliang, golden corn, heavily loaded grains, and large tracts of rice. How did these achievements come about? Commune members here told us that during the campaign to learn agriculture from Tachai, the broad masses of commune members persisted in changing the hills and controlling sand year after year. They covered all 4,320 mou of poor farmland of the brigade with a layer of black soil to transform the "poor and blank" features of San-tao-chuan brigade. Since 1970, the output of provisions has exceeded that in the "Yellow River" region for 3 years and surpassed that in "Chang-chiang" region for 2. In 1975, the highest per mou output reached 2,000 catties, and the average output per mou was raised 20 times that of the early stage following the liberation. It has become an advanced unit in Huai-te prefecture, Szeping district, and Kirin in the campaign to learn agriculture from Tachai.

We drove away from San-tao-chuan for less than an hour before we came to the Li-shu Irrigation District. We climbed up the dike to look afar and saw the network of irrigation canals. What was once the great northern waste land of Sung-liao Plain has now been changed.

Over half a century ago, white alkali covered the ground here, weeds were widespread, and inhabitation and smoke were rare and far between. Under generations of corrupt and decadent ruling classes and Kuomintang reactionaries, river dikes fell into disrepair for years and flood water ravaged the land year after year to render villages barren and people desolate.

After the liberation, extensive systems of irrigation and drainage canals were built here, tens of thousands of mou of waste land developed, and water from the Tung-liao river drawn for rice cultivation. Also established was a large grain farm. Following the Great Cultural Revolution, the farm reaped great bumper harvests for 11 consecutive years.

Gazing at the pleasing sights of Sung-liao plain along banks of the long meandering Tung-liao river, we could feel that the old features have truly been changed to take on a new look.

6693
CSO: 4006

NEW ACCOMPLISHMENTS IN PRODUCTION AND CONSTRUCTION IN POWER INDUSTRY

Hong Kong CHING-CHI TAO-PAO in Chinese No 3, 12 Jan 77 p 15

[Excerpts] In 1976, our country once again had a great quantity of newly built power plants plunged into production. This had given a new impetus to the development of our production in industry and agriculture. In the production of electricity, as of the end of November 1976, there were 50-odd power plants that had already accomplished the full-year power generating plan ahead of scheduled time by one to three months. Nationwide power generating capacity increased again compared with that of 1975.

The staff and workers of the First Engineering Division of Power Construction of Shangtung Province, by emulating the revolutionary spirit of the workers of Ta-Ching in promoting innovation and exploiting latent capacity, built two gigantic power generating sets with a capacity of generating 200,000 kilowatts each last year. In the history of electric power construction of our country, they made a new record -- installed two gigantic machine sets by one working unit in 1 year.

Once again in last year, the Wang-T'ing Power Plant accomplished the full-year mission of power generating ahead of scheduled time by three months. The Huang-T'ai Power Plant of Shantung, an advanced working unit, generated 100 million watts more than planned, saved 5,000 tons of fuel, four million watts of electricity through factory-wide energy conservation. The per-unit cost for power generating was lowered 16 percent over 1975.

As of November 25, the 10 machine sets of Tangshan Power Plant which were damaged in the earth quake had been completely repaired. The generating capacity has been raised to the level before the earth quake. At present, the capacity of generating and supplying in the entire Peking-Tientsin-Tangshan power-net has been fully recovered from the earth quake.

8953
CSO: 4006

MODERNIZATION OF CH'ANG-TU IN EAST TIBET

Hong Kong CHUNG-KUO HSIN-WEN in Chinese No 50, 22 Dec 76 pp 10-11

[Excerpts] Today, the highway around the city of Ch'angtu is both smooth and wide. In the city, the streets crisscross. The southeastern section of the city is a newly established culture-education-health area. It includes: Ch'angtu Middle School, health, agriculture, and other technical schools, a broadcasting station, an atheletic field, a movie house, and the People's Hospital which is under construction. In the last 10 years since the Great Proletarian Cultural Revolution in 1966, the newly constructed surface area in the city is equivalent to 20 times the area before the liberation. Today, Ch'angtu has become a newly prospered industrial city. The entire area has already begun to build industry of coal, electric power, chemical fertilizer, machine manufacturing, printing, building materials, leather, automobile assembly and repair, and subsidiary foodstuffs processing. Each county in this area has built agricultural machine factory. Commune-managed industry also has been developed. Those who used to be serfs for generations in the past and who tilled the land solely relying on their hands and yaks now begin to utilize the local-manufactured sowing machines, threshing machines, winnowers, and other agricultural machineries. They use local-produced chemical fertilizer to increase agricultural production. They use local-produced cement in their water conservancy projects and the construction of factories and dwellings.

The 1975 total industrial output value of Ch'angtu area increased 10 times over 1965, the year before the Great Cultural Revolution. The total foodstuffs output increased 57 percent over 1965.

In all the mines and enterprises in Ch'angtu area, workers of Tibetan origin constitute more than half of all the workers in this area. Many of them have been selected as cadres. Cadres of Tibetan origin in some mines constitute more than 80 percent of all the cadres.

8953
CSO: 4006

BRIEFS

FUKIEN INDUSTRY -- The total value of industrial output in Amoy increased by 26 percent in the middle 10 days of October over the first 10 days, 34 percent in the last 10 days over the middle 10 days, 30 percent in the first 10 days of November over the last 10 days of October. The province-wide output value of metallurgical industry in October increased by 12 percent over September. Iron, steel, steel products, and non-ferrous metals all increased in different extent. Light industrial products also increased daily. The output value of the 50 light industrial factories in P'u-T'ien area increased by 15 percent in October over September, more than 20 percent in November over October. As of the end of November, there were more than 20 light industrial factories that already had fulfilled the full-year production plans ahead of schedule. [Excerpts] [Hong Kong CHING-CHI TAO-PAO in Chinese No 1-2, 1 Jan 77 p 19] 8953

NEW POWER PLANTS -- The Hsinhua News Agency reported on 29 December that China had a number of new power plants and power generating sets built and plunged into production in 1976. This gave a new impetus to industrial and agricultural production. The nation-wide power capacity increased again compared with that of 1975. As of the end of November, there were more than 50 power plants had fulfilled the full-year power generating plan ahead of scheduled time by one to three months. [Excerpts] [Hong Kong CHING-CHI TAO-PAO in Chinese No 3, 21 Jan 77 p 2] 8953

CSO: 4006

SCIENTIFIC AND TECHNOLOGICAL

FAMILY PLANNING, BIRTH CONTROL LINKED TO LEARNING-FROM-TA-CHAI

Family Planning Work Well Done in Nan-kung-hsien

Peking JEN-MIN JIH-PAO in Chinese 2 Mar 77 p 4

[Article: "Family Planning and Birth Control Work Considered To Be One of the Important Aspects of Agriculture-Learning-From-Ta-chai Movement"]

[Text] According to a Hsin-hua News Agency telegram from Shih-chia-chuang, Nan-kung county of Hopei Province is an advanced unit in family planning and birth control work, having earned the praise of our brilliant leader, Chairman Hua. New achievements have been consistently gained in delayed marriage, and family planning and birth control work for several years. In the year 1976, the late marriage rate of the hsien was above 97 percent and the family planning and birth control practice reached a rate of 96.9. For 7 years now, the rate of natural population increase has been maintained at below 0.5 percent.

At the National Conference of Family Planning and Birth Control Work held in September 1974, Comrade Hua Kuo-feng personally met the delegates and listened to the reports of representatives of Nan-kung county and other units. In his address, Comrade Hua Kuo-feng expounded the importance of family planning and birth control work and pointed out the fact that family planning and birth control are closely related to the health and prosperity of the people of the various nationalities as well as the speed of development of socialist revolution and socialist construction. He fully supported the experience of some party committees of various levels in administering family planning and birth control work personally and in combining the work with the Agriculture-learning-from-Ta-chai Movement. He regarded this as a very important experience and called upon the party committees of all levels to pay attention to this experience so as to carry out satisfactory work of family planning and birth control in the rural villages. In June of 1975 the representatives of Nan-kung county participated once again in the National Public Health Work Conference and were once again received personally by Comrade Hua Kuo-feng. The staff members and masses of Nan-kung county remarked about the fact that the brilliance of Chairman Mao's

thoughts shines through the directives of Chairman Hua. These directives are the implementation of the care and concern of the party toward the masses and reflect the powerful desire of the masses to carry on with the revolution and to promote production. Those at the conference resolved not to betray the care and expectation of Chairman Hua and all resolved to do an even better job and to produce still greater achievements.

For several years the party organization of all levels in Nan-kung county have earnestly tried to implement the great teachings of Chairman Mao and the directive of Chairman Hua concerning the family planning and birth control work. This work has always been emphasized by the party committee. The secretary personally rallies the entire party to carry out class struggle, to develop revolutionary criticism, and to promote further development of the family planning and birth control work. He insists upon motivating the masses through detailed ideological work to raise the quality of the family planning and birth control work. He always insists upon combining the Agriculture-learning-from-Ta-chai Movement with the family planning and birth control work. He always insists upon training a red and specialized team of technicians.

The family planning and birth control work has had a great effect on liberating the work potential of women. The masses of women can thus devote their energy to the Agriculture-learning-from-Ta-chai Movement.

Since 1973 there have been more than 60,000 female workers participating in the basic construction work of agricultural fields each year in the hsien. Side by side with their male comrades, they worked to drill wells, dig ditches, turn and level ground to cause the irrigated acreage to be increased to 350,000 mu from the original 150,000 mu before the family planning and birth control work began. These basic construction works increased the capacity of drought and flood resistance and contributed to the increase of agricultural production.

Female Labor Force Liberated Through Birth Control

Peking JEN-MIN JIH-PAO in Chinese 2 Mar 77 p 4

[Article: "In T'ien-men County Family Planning and Birth Control Work Promoted the Development of Agriculture-learning-from-Ta-chai Movement"]

[Text] According to a Hsin-hua News Agency telegram from Wuhan, T'ien-men county of Hupei Province is doing a good job of family planning and birth control. For 3 years, the natural population growth rate of the hsien has been stabilized to about 0.7 percent. Practice of family planning and birth control has liberated many women from the bondage of house work so that they can positively participate in the production work of the collective body to further promote the development of the agriculture-learning-from-Ta-chai movement and the mass movement of extending Ta-chai-hsien. Last year, the total yield of cotton of T'ien-men county exceeded 1 million tan and the yield of grain was also 100 million chin higher than that of 1975.

The party organizations of all levels in T'ien-men county include the work of family planning and birth control in their daily agenda so that this work is emphasized by the leaders and some one is in charge of it at every level. The first secretary of the hsien committee who went to Chien-k'ang-1 Brigade of Hsiao-miao Commune as his field assignment seriously carried out the family planning and birth control work while directing the agriculture-learning-from-Ta-chai movement to cause that brigade to become an advanced unit in both aspects. The party branch of Ts'o-fan Brigade of Yang-lin Commune had regarded the work of family planning and birth control as outside of its daily responsibilities and did not emphasize it. The family planning work and the agricultural production of that brigade had thus remained backward for a long time. Later, propelled by the hsien party committee, the understanding of the importance of the family planning and birth control work was improved. Through the efforts of several years, that brigade has become the advanced unit in family planning and birth control work in the entire hsien and the advanced unit in agriculture-learning-from-Ta-chai movement as well.

Most recently, while implementing the spirit of the Second National Agriculture-learning-from-Ta-chai Conference, the hsien committee of T'ien-men county organized more than 50 family planning and birth control propaganda groups and teams to visit rural villages, factories, agencies, and schools to explain the directives of Chairman Mao, Premier Chou, and Chairman Hua concerning family planning and birth control work and the importance of practicing family planning and birth control. They organized classes to read books on the subject, and to criticize the counterrevolutionary crimes of Liu Shao-ch'i, Lin Piao, and the "gang of four" in obstructing the family planning work so as to improve the work even more.

Two Counties Hailed for Good Family Planning Work

Peking JEN-MIN JIH-PAO in Chinese 2 Mar 77 p 4

[Text] With regard to the method of doing a good job of family planning and birth control work, Nan-kung county and T'ien-men county provided a good experience. The method of Nan-kung county has received the full support of Chairman Hua.

These two hsien carried out the family planning work well because the party organizations of all levels provided strengthened leadership and included the work in the agenda to become one of the important contents of the agriculture-learning-from-Ta-chai movement. Besides, while developing the agriculture-learning-from-Ta-chai movement, the family planning and birth control work is carried out seriously. The agriculture-learning-from-Ta-chai area is made to be the family planning and birth control work area. The two jobs are combined to produce good results to promote further development of the agriculture-learning-from-Ta-chai movement.

We must pay attention and learn the experience of the two counties so as to do a good job of the family planning and birth control work in the rural villages.

Careful Records Kept on Women of Child-Bearing Age

Hong Kong WEN HUI PAO in Chinese 4 Feb 77 p 3

[Article by Wei Wen [3262 2429]]

[Text] Two picture posters promulgating family planning were hung glaringly on the wall of the disease prevention and control station manned by the Inhabitants' Committee of T'un-chuan Hu't-ung of Peking. A desk was placed in front of the picture poster. The station chief, Kuan Chih-ch'in [7070 1807 3830] was filling out a card, which was the family planning card of a 36-year-old female worker. Soon after giving birth to her second, a boy, she accepted surgical sterilization. Her first child was 6 years old then and for 6 years she had been practicing birth control under the guidance of the station and came here periodically to receive free birth control drugs.

Aside from helping the more than 600 families of the Hu-t'ung [subdivision] in matters of disease prevention and in treating minor injuries and ailments, the station is also responsible for the family planning work of the Hu-t'ung. It has on file the family planning cards of all the 364 child-bearing age women, recording their age, number of previous childbirths, and method of birth control, etc. The six public health workers of the station, assisted by a number of after-work propaganda workers selected from among the inhabitants carry out the work of the station. They periodically visit couples of child-bearing age to explain to them the meaning of family planning and to deliver to them birth control drugs and implements. Due to the fact that all are neighbors of the same Hu-t'ung, these visits are conducted under an intimate and informal atmosphere. During the year of 1976, there were only 12 infants born in the entire Hu-t'ung.

The city of Peking has a total of more than 800 such prevention and treatment stations manned by inhabitants themselves. They form the components of the city's family planning network, which also includes the medical service centers of the agencies and factories and all the large hospitals. These medical organizations work under the direction of the family planning establishments of the various levels of revolutionary committees. The family planning and birth control work of the city of Peking is directed by the Peking Municipal Family Planning and Birth Control Leadership Team.

In China family planning proceeds in accordance with the principle of a combining voluntary action of the masses and guidance of the state. The practice of family planning has caused the natural growth rate of population in China to drop every year. The results have been apparent in not a few regions. In Kiangsu Province of East China the natural rate of population increase was 27.4 percent in 1965 and about 0.11 percent in 1976.

Population Increase Rate About Two Percent

Hong Kong WEN HUI PAO in Chinese 4 Feb 77 p 3

[Text] The practice of a policy of planned increase of population is not due to the existence of the so-called problem of "overpopulation" or

"population explosion" in China. China is a socialist country in development. The national economy develops according to a planned proportion; therefore, population increase must also be in accordance with a plan. Since the nation was established, the population of China has increased about 2 percent every year while the average increase of grain production has been close to 4 percent per year. China now has a cultivated acreage of a little more than 10 percent of the total area of the country and the grain yield per hectare is still not very high. The level of mechanization is also low. Judging from whatever aspect, the grain production potential remains very great.

Family planning in China is carried out according to its own condition of reality. In regions of dense population and high birth rate, delayed marriage and birth control are advocated. In regions of minority nationalities of sparse population and other conditions, proper measures are adopted to develop the population.

The medical organizations of the cities and the rural areas have outpatient clinics to direct techniques of planned parenthood. The municipal medical service persons are organized into teams to visit rural villages and communes to teach the techniques and to improve the technical level of public health workers of the basic units. Many commune public health centers are capable of performing surgeries for birth control, including inserting or removing intrauterine devices, ligation of Fallopian tubes, and vasectomy. Many female barefoot doctors of production teams are also able to insert or remove intrauterine devices. They carry their medicine chest on their back and visit and perform the operation in the homes of the commune members.

Sterilization and Artificial Abortion Free of Charge

Hong Kong WEN HUI PAO in Chinese 4 Feb 77 p 3

[Text] The state provides birth control drugs and implements free of charge. In the rural villages and the agencies and factories of the cities, there are female staff members, barefoot doctors, and red medical workers, as well as family planning propagandists, and midwives delivering birth control drugs and implements to the masses who need them. Many stores have a special counter supplying the drugs and the implements free of charge. All birth control operations, including sterilization and artificial abortion are performed free of charge. For those hospitalized, only food is charged. Based upon the nature of the operation, a certain period of leave from work is provided. During such a leave period, the staff members of the state and the workers of factories, mines, and industries receive normal pay while the members of people's communes receive their proportional supplements.

Family planning is not only beneficial for the health of the mother and the children it can also cause many women to be able to participate in work. While developing family planning, the work of protecting the health of

women and children is strengthened simultaneously. As much as possible every birth must be a live birth and every live birth grows into a strong child. The experience of many places proved that the work of protecting the health of women and children is a condition for the smooth development of family planning and birth control work.

In order that family planning and birth control can become a conscientious action of the masses themselves, propaganda work should be emphasized. The work must be conducted with the help of masses. Aside from the one million or so propagandists who live with the masses and perform the propaganda work after their normal working hours, teams of propagandists are also organized to go to the local areas to open family planning exhibitions. Newspapers and magazines, pamphlets, broadcast programs, slides, and dramas are also used for propaganda. The propaganda materials generally advocate that it is best for a couple to have two children and the interval between the first and the second child should be 3 to 4 years. The contents of the propaganda also include delayed marriage. The so-called delayed marriage is a statement aimed to counter the practice of early marriage of the past. Before the liberation, in the rural villages of China marriages between 15 to 16 year olds were very popular. Now, marriages between men over 25 and women over 23 are generally advocated. In cities the marrying age is slightly higher than that. In this manner, the young men and women can devote more of their energy to learning politics and professions. If some people who have not reached these late ages insist upon getting married even after receiving propaganda and education are permitted to register their marriage as long as they are above the legally permitted marrying age.

The movement of criticizing Lin Piao and Confucius, which began in 1974, provided a great impetus to the development of family planning and birth control work in China. This is due to the fact that this movement swept away the more than 2000-year-old Confucian thoughts of "preferring the male over the female," and "respecting the male but not the female." In the past after the birth of several girls many people still wished that the next birth would be a boy. Now, even in the rural villages, instances of couples having two girls and not wishing to have any more children are not at all rare.

6248
CSO: 4008

CHIANG CH'ING'S 'CARING HEART' REVEALED TO BE 'VICIOUS'

Hong Kong WEN HUI PAO in Chinese 4 Feb 77 p 3

[Excerpt from T'I-YU PAO [PHYSICAL EDUCATION NEWS]]

[Text] Once, in 1971, Chiang Ch'ing was watching the performance of a certain athletic team, and put on an air of being extremely concerned. She said, as the subject of improving the physical condition of the athletes came up, "Is their food good or not? I almost feel like using my wage to buy them something good to eat." At the 1975 National Physical Education Workers' Conference, she refused to accept Chairman Mao's attempted reeducation and disobeyed the rule of the central party when she gave materials and books as gifts [to the athletes]. Hers was really quite a performance.

All her sweet words of expressing her "concern" toward the living condition of the athletes and all her cheap acts of political "protection" are all forms of hypocrisy. If you cannot be utilized by her, if you cannot follow her command, her "concern" and "protection" will also disappear like smoke. In the place of "caring" and "protecting," all kinds of "could have been" and "would have been" crimes will come to give you a great big terrifying "hat," which may be something called "stubborn force of tradition," or "injurious to the dignity of the nation," etc. It is obvious that Chiang Ch'ing's "caring heart" is in reality there to conceal a "vicious heart" which she cannot reveal to anyone.

6248
CSO: 4008

ACCURATE WEATHER FORECASTS BENEFIT SHIPS AT SEA

Peking K'O-HSUEH SHIH-YEN in Chinese No 7, 1976 pp 24-26

[Article by Wang Chao-ch'un, Technical Department of the National Maritime Bureau: "Navigation and Weather"]

[Text] Oceans occupy over 70 percent of the earth's surface area. From ancient times to the present day, this natural communications route--the ocean--has played an important, positive role in the economic and cultural exchange between China and the various other countries of the world. After the liberation and under the direction of Chairman Mao's revolutionary line, Chinese maritime enterprises underwent rapid development, continuously increasing the number of ships sailing in coastal waters as well as distant oceans. In order to adapt to the needs of navigation and of business production, the Chinese maritime departments intensified their use of the survey method for catastrophic marine weather, made efforts to ensure timely dispatching of hydrological weather forecasts in Chinese waters, and continually raised the forecast quality so that certain conditions have been proposed for maritime navigation and work. An understanding of the main maritime meteorological phenomena which affect navigation is extraordinarily necessary for formulating precise navigation plans for the vast number of personnel, for selecting good areas for casting anchor, and for correctly using maritime weather forecasts in order to avoid and resist catastrophic weather and to preserve navigational safety.

What are those main maritime meteorological phenomena affecting navigation in the Chinese sea areas?

Vast Sea Fogs

On the boundless green waves of the ocean there sometimes appears a vast stretch of clusters of extremely tiny water drops which adhere tightly to the surface of the sea while floating in the air and causing the level of visibility to deteriorate markedly. This is the sea fog. Along the southeast coastal areas of China the sea fog can often occur during the two seasons of spring and summer. Thick sea fogs can be so bad that you cannot distinguish anything even a foot away, and this can affect navigational safety,

directional positions, and communications in varying degrees. Due to the occurence of sea fogs, collisions among ships of various nations and other accidents, such as crashes against reefs, are not rare. During wars at sea, such fogs could even more seriously affect the release of torpedos and firing of guns.

In terms of the type of conditions which cause them to form sea fogs along the Chinese coastal areas can be divided into the following types: level-flowing, dripping, evaporating, and radiating. The main one is the level-flowing fog, which is formed when warm and humid air moves over the colder surface of the sea (Fig. 1). Between spring and summer every year, great quantities of warm and humid air flow incessantly from the south to the north onto the cold sea surface along the Chinese coast.

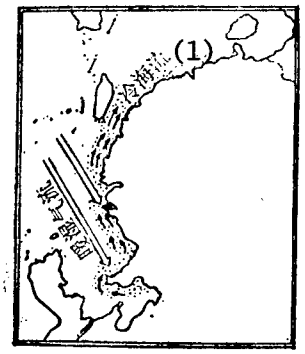

图1 我国沿海平流雾的形成

Figure 1. Formation of the Level-Flowing Fog Along the Chinese Coast

Key:
1. cold currents
2. warm and humid currents

This situation is the one that is most conducive to the development and occurrence of the level-flowing type of fog. This is why the season for sea fog along the southeast coast of China mostly coincides with the southeast monsoon period with its high temperature and high humidity along with an atmospheric terperature that is higher than the water temperature. Secondly, there needs to be a cooling-off condition in which the greater the difference in temperature between the level-flowing warm and humid air currents and the colder sea surface, then the greater the opportunity for the occurrence and development of level-flowing fog. The above-mentioned difference is mainly determined by the degree of atmospheric temperature and humidity and by the degree of sea surface temperature with its level

gradient. Below the warm and humid air of the stratosphere, the temperature of the sea surface dips more rapidly, while the warm and humid air also cools more rapidly. In this way the level gradient of the sea temperature increases and the possibility that fog will form becomes greater. The area of occurrence of the sea fog is generally limited to a sea surface whose temperature is below 20° C. Thirdly, the formation of fog depends on the atmospheric stratocumulus and temperature. More often than not, sea fog occurs in the type of stable atmosphere that is generated when warm and humid currents of air flow over the colder surface of the sea, while at the same time the lower level atmosphere and the sea surface produce an exchange of temperature and humidity whereby the air on the lower level atmosphere and the sea surface produce an exchange of temperature and humidity whereby the air on the lower level tends to be stable and produces adverse heat. Via a thorough exchange between the oceanic and atmospheric temperature and humidity, the lower level air on the nearby sea can then reach saturation and condense into fog. At this time, the wind speed is generally within the range of 4-8 miles/second. If the wind speed is great enough to produce turbulence, this causes the adverse heat to rise up and off the surface of the sea, and then low clouds are formed.

From the conditions which lead to the formation of level-flowing fog, some characteristics of this type of fog can be determined:

1. It possesses greater thickness (it is able to reach several hundred meters) and more extensive level scope (it is able to reach over 100 kilometers).

2. It usually occurs under cloudy skies and is often accompanied by stabilized low clouds and drizzle.

3. The level-flowing fog along the coastal areas usually has daily solar and seasonal changes. Following an increase in temperature due to sunshine, the fog will become thinner and will disappear or ascent upwards following the whirling of air currents to become low clouds. Fogs are generally more numerous in spring and summer than in fall and winter. Generally speaking, the seasonal distribution of fogs along the Chinese coastal areas extends from the south to the north. For example, the fog season in the South China Sea is from December of one year to April of the next year, with more fogs occurring in March than during the rest of the period. In the East China Sea, the fog season is from February to June, with most fogs occurring from April to June. In the Yellow Sea and the Po Sea, the fog season occurs from March to July, with most fogs taking place in June and July. After August, the sea fog rarely occurs.

4. The duration of this type of fog is relatively longer. According to statistics, sea fog in the vicinity of the Hainan Island can last up to 5 days; in the Kwangchow Bay area it can last up to 9 days; in the East China Sea up to 24 days; and in the Chiaochow Bay area of Shantung Province it can last as long as 36 days.

Sea Fog is an often seen meteorological phenomenon along the Chinese coastal regions. Areas which have frequent fogs include such places as Cape Kao of Shantung, Chiaochow Bay, the mouths of the Yangtze, Min, and Pearl Rivers, and Kwangchow Bay. These are indeed some of the main Chinese fishing areas, and because of this, special attention should be paid to naviation in these areas during fog.

The main hindrance to navigation in the fog is the bad visibility. This is especially true in the shallow waters near a coast where navigation routes are complex. For example, when you are sailing in or out of port and are able to determine your position by sight alone, accidents can easily occur. Hence, all of the following methods are usually used when navigating in the fog:

1. The Method of Calculations. This method is ordinarily used quite often. The chief use of this method before the ship enters the foggy area is to calculate and determine precisely the ship's position as a starting point for the upcoming navigation in the fog. The navigation speed should be stable with few changes in order to reduce the number of directional changes the ship must make and in order to ensure timely correction of her direction in response to sea currents. When fog occurs, the wind velocity is generally small enough so that wind pressure can be omitted from consideration when striving to keep the ship sailing along the planned route. In areas where the water is deep and changes are conspicuous, it is also helpful to survey the depth continuously with respect to the navigation chart and the planned route; the purpose of this is to help judge the wake and position of the ship. If you sail close to the shoreline, you can plan your route and choose to navigate outside the line where the depth is equal to 30 meters. If during your continuous sounding of the depth you discover that the actually surveyed depth of the water is less than 30 meters, this tells you that your wake is oblique with respect to the area inside the line and that at this time you must correct the direction in which you are sailing, making the ship sail toward the outer side of the planned route.

2. Radar for Piloting. The use of radar to navigate in the fog is an important method of avoiding collisions and preventing the running aground on a reef. The radar signal can show the positions of your ship and another's. You can guarantee yourself a safe passage if only you take the appropriate timely measures based on the relative positions of both ships. When the beam dial of the radar shows the other ship in the position of your ship's bow and shows that it is maintaining this course without change and that the distance between the two ships is becoming smaller, this indicates that your ship and the other one are on a collision course. You should then change your ship's direction in order to avoid a collision. When the beam dial shows the other ship on the left or right of your ship's bow, you should make a careful observation and analysis. If there are no obvious changes in the directional positions of both ships and if the distance between them is continuously being reduced, then there is a danger of their intersecting and colliding. However, if the distance between the

two continuously increases, this means that the two ships are gradually drawing apart.

3. Weather Forecasting for Navigational Purposes. These are some of the laws regarding the appearance and disappearance of sea fogs along the Chinese coast, which have been summed up by a vast number of navigators from their own experiences. When using these experiences in navigation, you must consider together the weather forecast and the actual hydrological situation. Generally speaking, changes in the fog and the wind are quite closely related and therefore when you are navigating in a foggy area you can always judge the occurrence, duration, and disappearance of the fog in accordance with the changes in the wind. For example, along the Chinese coast during the seasons of spring and summer when the wind blows from the southeast (in the sea regions to the north of Ch'eng Shan T'ou, the wind blows from the northeast), the fog can easily occur, especially when a northwest wind abruptly turns southeasterly, which causes the foggy area to expand (in the North China Sea and the Yellow Sea, the wind is northeasterly). The fog will disappear whenever the direction of the wind turns northwesterly. When the wind's velocity increases more than four grades, this will also cause the sea fog to disappear. Another example: quite a few of the level-flowing fogs along the Chinese coast flow in from the west sea regions of Japan and Korea. Therefore, when you hear over the radio that the sea fogs are occurring on the western seashore of Japan and Korea you know that they may also occur soon along the coasts of China. At this time you can take appropriate measures to flee from the area where the sea fog may possibly occur, in accordance with the forecast, the actual situation and in line with your navigation task.

The Disturbance-Causing Windstorm on the Sea

The typhoon is a meteorological system which has a greater effect on the Chinese coastal regions. At the time a typhoon occurs, there are violent winds and huge waves on the surface of the sea, and the visibility is very poor. It causes great danger and harm to navigation and to anchored ships. Because of this, you should learn the path of movement and the intensity of the typhoon in order to take effective measures to strengthen your protection.

The typhoon is a kind of tropical cyclone, formed on the tropical sea. It can enter areas of the temperate zones. The distribution of this kind of tropical cyclone is very vast, and it has different names in different places. In the Northwest Pacific and in the Chinese coastal areas it is called a typhoon; in the Atlantic regions it is called a hurricane; in the South Indian Ocean areas it is called a tropical cyclone, and in Australia it is called a Willy-willy.

The typhoon which affects the Chinese sea areas occurs chiefly on the ocean to the east of the Philippines, that is, within 10°-20° north latitude and

125°-150° longitude. The typhoon which originates in this area is usually called the Pacific typhoon. Aside from this, there are also a small number of typhoons occuring on the South China Sea, most of which enter it from the ocean area to the east of the Philippines. Fewer typhoons originate in the South China Sea itself; these are called the typhoons of the South China Sea. The Chinese Meteorological Department has divided typhoons into three classes, according to their degree of intensity: the tropical low pressure typhoon (formerly called the weak typhoon), the typhoon, and the strong typhoon (see chart below).

Typhoon Classification Table

Name	Average of Greatest Central Wind Force (Grades)	Corresponding Wind Velocity (m/sec)
Tropical low pressure typhoon	6 - 7	10.8 - 17.1
Typhoon	8 - 11	17.2 - 32.6
Strong typhoon	12 or more	over 32.6

The typhoon may occur in all of the four seasons of the year, but it is most common in spring and summer. According to certain statistics, an average of 29 typhoons occurs each year, while the maximum may go as high as 40 and the minimum may go down to 20. It can be seen from Figure 2 that the highest frequency occurs in August and September, whereas the number of typhoons occurring during the summer amounts to more than half of the grand total. After a typhoon has formed, its path of motion may have different characteristics in different seasons. These characteristics, however, can be divided into three categories, namely, changing of direction, moving westward, and landing in China. The typhoons which landed in China account for approximately one fourth of the grand total. The period from July through October is a good period for the typhoons which change their direction; September through December is the period for westerly moving typhoons, and July through September is the period for typhoons which land in China.

The great terrifying power of the typhoon creates very serious hazards to navigation and to anchored ships. Hence, after you have learned that a typhoon is coming you should then positively take measures to flee and avoid navigating in the typhoon area or else enter the bay area of a harbor for shelter from the wind. If a sailing ship has no way to flee from the typhoon area, it should do its best to choose the most advantageous conditions to resist the storm. Due to the generally nonsymmetrical distribution of the wind within the typhoon's sphere, the wind intensity is greater in the right semicircle than in the left one. This is because the direction

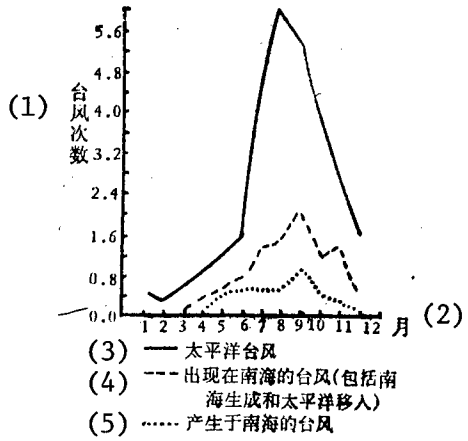

图 2 台风发生次数月平均曲线

Figure 2. The average curve for the number of typhoons and the month of their occurrence.

Key:

1. Number of typhoons
2. Months
3. The Pacific typhoon
4. Typhoons occurring in Hainan (including those which originated in Hainan and those which moved in from the Pacific)
5. Typhoons which originated in Hainan

of the wind in the right semicircle is in basic conformity with the general direction of the typhoon's movement, while the situation in the left semicircle is just the opposite. Hence, the right semicircle is usually called the "dangerous semicircle" (Fig. 3). Therefore, if you can determine your ship's position, a ship sailing within the typhoon area need only utilize the navigable semicircle to the full to avoid the direct attack of the typhoon. If on-the-spot meteorological observation reveals that the wind direction of the typhoon rotates clockwise and that the atmospheric pressure is falling continuously, this is a clear indication that your ship is within the front half of the right semicircle. As soon as you have discovered that your ship is located within the dangerous semicircle you should immediately take appropriate measures to leave this area in order to securely guarantee the safety of your navigation.

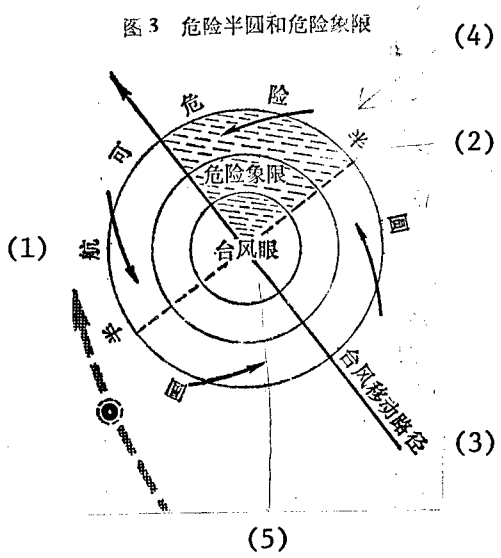

Figure 3. Dangerous semicircle and dangerous sector

Key:

1. Navigable semicircle
2. Dangerous semicircle
3. Path of the typhoon
4. Dangerous sector
5. Eye of the typhoon

The Gigantic Terrifying Power of the Tornado

The tornado is in fact an atmospheric turbulence which extends from the rain-packed clouds toward the surface of the earth or the water within a very small sphere, but it is exceedingly destructive. The diameter of this kind of turbulence is very small, generally from 200-300 meters, while the smallest could be only 10 meters or so in diameter. The duration of the tornado is relatively short, ranging from a few minutes to a few hours. However, its central atmospheric pressure is extremely low, making the lump of accumulated clouds stand vertically like a funnel. The wind velocity of a strong tornado can generally reach 100 meters per second and sometimes even 175 meters or more per second. A tornado is indeed a most fierce type of windstorm.

A tornado usually occurs under the meteorological conditions of high temperature, high humidity, and very unstable atmospheric strata. On the oceans of the tropical and temperate zones, it usually occurs at the same time as the summer thunderstorms. Whenever a tornado occurs there is necessarily an occurrence of rain-packed clouds plus falling temperatures.

Although the destructive force of the tornado is great, the path of its movement always follows the direction of the rain-packed clouds above it. Its velocity of movement is generally 50-60 kilometers per hour, but with a brief duration and within a small sphere. Because of this, ships at sea rarely encounter a tornado, but if they do they should take timely and appropriate measures to avoid it.

Cold, Humid Weather

The occurrence of cold and humidity is a process that produces violent dropping of the temperature and gusty weather due to the cold northern air flowing southward. The cold and humid gusty winds which affect the Chinese sea areas occur chiefly between late autumn and spring of the following year; during this period the strongest gusty winds occur mostly from November to April. One strong, cold and humid gale can cause gusty winds to sweep successively from north to south over the entire Chinese sea area, namely, first in the Po and Yellow Seas with a continual push toward the East China Sea and the Taiwan Strait. Extreme cold and humidity can also produce gales in the South China Sea, but the latter is relatively rare. Gales produced by cold and humid weather can generally reach 7-9 grades and even 10 grades. This is the important meteorological phenomenon which affects safe navigation in the Chinese sea areas during the half year of winter. Therefore, when navigating in the Chinese sea areas during the above-mentioned period, besides paying special attention to the gales produced by the process of the cold and humid weather, you should also pay attention to the accompanying violent drop in temperature. Such a violent drop in temperature could cause freezing along the northern shores of the Po and the Yellow Seas. Moreover, in a year which already has serious freezing conditions, this violent drop in temperature could also cause the above-mentioned sea areas to freeze in varying degrees. As to the phenomena of snowstorms, sandstorms or (Pao hsien), they can also cause a certain amount of difficulty to sea navigation.

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FORMATION OF RICH IRON ORE DURING EARTH'S EVOLUTION EXPLAINED

Peking K'O-HSUEH SHIH-YEN in Chinese No 7, 1976 pp 3-5

[Article by Yeh Hung, Geological Institute, Chinese Academy of Sciences]

[Text] There are several types of enriched iron ore, the principal one of which is called "enriched iron ore of the weathered crust type from the ferrous quartzite of the Pre-Cambrian Era." The Pre-Cambrian Era is a geochronic name which designates the lengthy period of geological time which lasted between approximately 4 billion to 600,000,000 years ago. A great quantity of the richly ferrous quartzite was formed in the earth between about 3.4 to 1.9 billion years ago. The ferrous content of this type of rock may be over 30 percent, and it is the main source of the iron ore which is now being excavated on a large scale. After the ferrous quartzite had been formed, a portion of it was exposed to the earth's surface for a long period of time, and then through the action of weathering and that of air and water, the magnetite in it oxidized and became anhydroferrite. At the same time, elements other than iron were washed away through leaching, thereby causing the iron to become further enriched and then to be formed into the highly rich iron ore of the weathered crust type. The ferrous content of this iron ore may reach about 60 percent or sometimes even higher than 70 percent. Having been leached, it therefore contains lesser amounts of impurities and is highly suitable for smelting. Moreover, since it was formed from a deposit in the primitive sea basin, the ore bed is stable, the body of ore huge, and the stored quantity often quite sizeable. According to incomplete statistics, the presently known quantity of this type of rich iron ore in the world is over 120,000,000,000 tons, and it amounts to about 70 percent of the total stored quantity of enriched iron ore in the entire world.

Everything in nature is a produce of incessant movement. The enriched iron ore of the weathered crust type was the result of long periods of conflicting struggle between various factors of the interior and exterior of the earth during the several billion years of its development. An examination of the laws governing the formation of the weathered crust type of enriched iron ore during the evolution of the earth's history will show that the vast land of China possesses each and every advantageous geological condition which produces and stores the enriched iron ore of this type. Provided we can

consciously utilize dialectical materialism as a guide to carry out our search and to explore seriously, we can perfectly discover more enriched iron ore.

The Iron in the Interior of the Earth

Iron is the most abundant element in the earth, and its weight accounts for about 35 percent of the total weight of the earth. You may ask: Since over one-third of the earth's weight is iron, how come it is not so easy to find the iron? The answer is that the distribution of the iron inside the earth is very uneven. According to geological and geophysical research, the earth is divided into three parts: the centrosphere, mantle, and crust (Fig. 1). The centrosphere is mainly made up of iron and nickel; according to some calculations, over 70 percent of all the earth's iron is concentrated in the centrosphere, while the major part of the remaining iron is in the mantle, leaving the earth's crust containing less than 1/10,000 of the total amount. Therefore, the amount of iron within our reach is not that great.

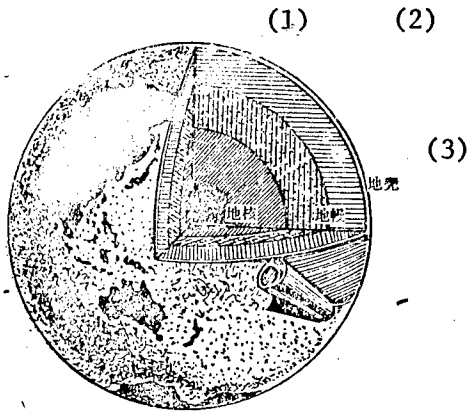

图1 地球构造示意图

Figure 1. Analytical drawing of the earth's structure

Key:
1. centrosphere
2. mantle
3. crust

According to the nebular hypothesis of the origin of the solar system, the earth was formed from the initial nebular material through contraction and condensation. About 4.5 to 5 billion years ago, this contraction and condensation reached a new phase and produced the primitive earth. According to some estimates, during the process by which the nebular matter condensed and evolved into the primitive earth, the heat produced from the mutual collision of small stars and from their gravitational condensation was

probably only sufficient to cause the primitive earth to possess an initial temperature of about 1000° C. This temperature was not hot enough to cause the iron inside the earth to melt. Because of this, the primitive earth was not indeed so clearly divided into the three great strata--centrosphere, mantle, and crust--but generally had similar constituents both in the interior and on the surface. The distribution of iron was also generally even.

After the formation of the primitive earth, its internal temperature was gradually increased by means of further gravitational condensation and the absorption of the dynamic energy from the collision of meteorites, plus the thermal energy released from the transformation of radioactive elements. About 1 billion years after the formation of the primitive earth, i.e., about 4 billion years ago, the geothermal curve inside the earth at a depth of 400-800 kilometers coincided with the melting curve of iron (cf. Fig. 2). The iron there began to melt on a large scale and under the influence of gravity it accumulated and flowed downward. A considerable portion of the potential energy of the gravity released during the process of occurrence of this huge dynamic force was transformed into thermal energy, thereby once more raising the entire interior temperature, which now exceeded 2000° C. Thus the molten sphere of the iron was further expanded and the iron's melting action was also intensified. This process continued to take place, and thus the iron, which was originally distributed evenly throughout the earth, moved incessantly toward the earth's core and formed the earth's ferrous centrosphere. At the same time, the lighter elements such as oxygen, silicon, and nickel moved upward continuously and formed the earth's outer silicon-nickel crust--the terrestrial crust, while the differential residuum in the middle stratum of the earth constituted the terrestrial mantle.

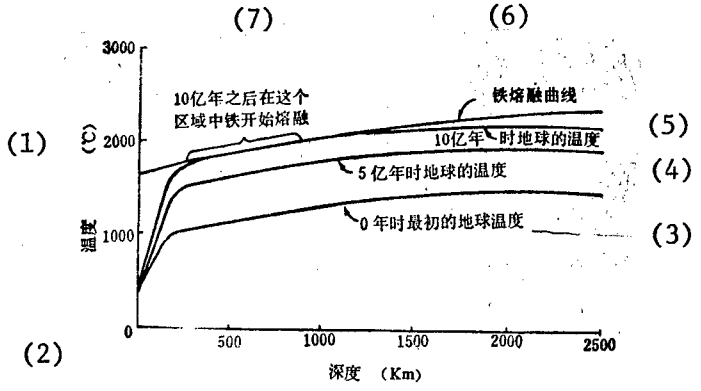

图 2 地球早期温度曲线的变化

Figure 2. Changes in the Early Thermal Curve of the Earth

Key:

1. Temperature in degrees centigrade
2. Depth in kilometers
3. Earth's initial temperature at year zero
4. Earth's temperature at 500,000,000 years
5. Earth's temperature at 1 billion years
6. Melting curve of iron
7. After 1 billion years, the iron in this area began to melt

The Ancient Treasure-Gathering Basin

Certain phenomena indicate that the movement of iron towards the earth's centrosphere may still be going on at the present time. Some people have carried out calculations based on the change in speed of the earth's rotation and think that even now iron still flows from the mantle to the centrosphere at the rate of about 50,000 tons per second. Now, at this point, someone could ask: If this is so, where does the iron on the earth's surface come from nowadays if for 5 billion years it has flowed uninterruptedly towards the earth's centrosphere? Our answer to this is that from the point of view of the general tendency of the earth's evolution, it is true that the iron is indeed incessantly being concentrated in the centrosphere under the action of long periods of conflict between gravity and thermal energy in the interior of the earth. However, within a certain period and under certain conditions, the residual iron in the earth's mantle could also gush forth towards the surface of the earth. This reverse movement of the iron is chiefly realized through the rifting of the earth's crust and the intrusion of the igneous magma cuased by it, plus the great scale of volcanic eruptions. By cutting open the crust of the earth, this rifting causes the pressure of the crust's lower strata to drop, and thus it forces the material of the mantle to melt and become igneous magma which gushes upwards and then in turn manifests itself as a volcanic eruption upon reaching the earth's surface. The modern volcanic rocks found in large areas of East Africa and of the oceans were formed this way. However, over 3 billion years ago, in the latter period of the Archaean Era, the geothermal gradient was higher than it is today because the earth's crust was thinner at that time. Therefore, the size and number of rift valleys were greater than in the modern period. The volcanic eruptive activity in the rift valleys was also much more violent. Thus, the violent volcanic activities, which were widely scattered over the earth, brought great quantities of material from the mantle to the surface of the earth, where it was deposited in the basins of the late Archaean type of rift valleys. These basins were really "treasure-gathering basins" whose great quantities of ferrous quartzite offered to us the earliest industrial iron ore deposits in the world.

A violent movement of the earth's crust occurred in the late Archaean Era and caused these rift-valley type of basins to close up. The earth's evolution then entered a new phase--the early Proterozoic Era. Following the closing up of the rift-valley basins of the late Archaean Era, new basins of the Labrador type were formed in some other areas. During this time, the actions of weathering, portage, and sedimentation on the outer part of the earth, as well as the transformative action of living things on the sedimentation, became more evident day by day. These actions were conducive to enrichment of the iron. Because of this, the sedimentary basins of the early Proterozoic Era contain not only great quantities of ferrous quartzite or other similar types of ferruginous siliceous rock, but they also offer us more industrially valuable iron ore deposits than those of the late

Archaean Era. More than 50 percent of the world's iron ore deposits were formed in this period, and this is the "treasure-gathering basin" of the second period in the earth's history (Fig. 3).

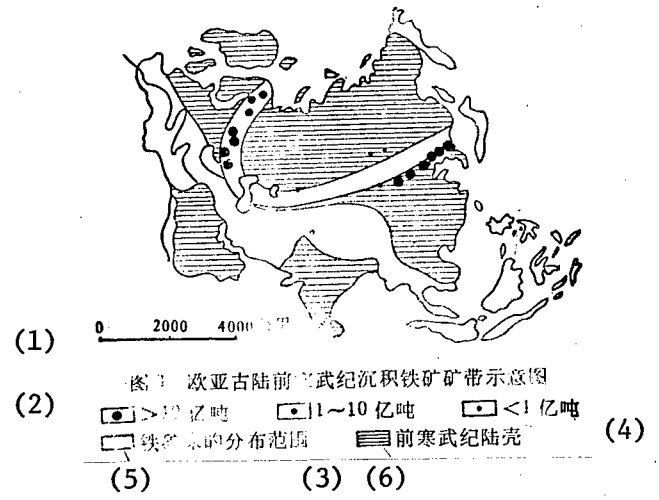

Figure 3. Drawing showing the ferrous zones of sedimentary iron ore in the ancient continents of Europe and Asia in the Pre-Cambrian Era.

Key:

1. kilometers
2. 1 billion tons
3. 100 million - 1 billion tons
4. 100 million tons
5. distributional sphere of the iron ore beds
6. the earth's crust in the Pre-Cambrian Era.

The Natural Ore-Selecting Factory

To our deep regret, this sort of treasure-gathering basin was formed only twice. At the end of the early Proterozoic Era, about 1.8 - 1.9 billion years ago, the evolution of the earth again entered another new phase, and from that time onward there has never been another large-scale formation of ferrous quartzite like the ones in the late Archaean and the early Proterozoic Eras. This is because after some 1.5 billion years of evolution, the initial crust of the earth has already been gradually thickened and solidified and its permeability has been weakened, so that although the materials in its mantle can still gush forth upward now and then along the huge rifts, yet their power is much less great than before. This is of course a regretable happening from the point of view of the iron in the earth's crust.

However, all things in the world are binary. Although the thickening and solidifying of the crust are not conducive to continuous gushing forth of great quantities of iron from the mantle, yet by becoming gradually stabilized the crust offered a comparatively more advantageous living environment for the reproduction and proliferation of living things.

The activities of the living things have made the aerosphere of the earth produce profound changes. The initial aerosphere of the earth was formed about 4 billion years ago. It consisted of the volatile and inert gaseous bodies brought out by the violent volcanic activity. Like the air on Mars and Venus it contained very little free oxygen. The vestiges of the earliest life on earth appeared 3.1 - 3.2 billion years ago, and they were microscopic bodies containing ammoniac acid. During the entire late Archaen Era and down to the early Proterozoic Era, the only living things on the earth were some low level microbes and blue-green algae (chlorophyceae and cyanophyceae). The algae possessed the ability to absorb the light and through this action they released free oxygen and thus inconspicuously transformed the constituents of the initial aerosphere. After more than 10 billion years, their work began to show results. In the final period of the early Proterozoic Era, about 2.0 - 1.9 billion years ago, there appeared on the earth red strata (because the bivalent iron was oxidized into trivalent iron and thus the rocks in the earth's strata appeared to be red in color). This signified that the development of the earth's aerosphere had entered a new stage. The new aerosphere, which was rich in free oxygen, together with the following water on the earth's surface, formed a natural ore-refining "factory," transforming the old ferrous quartzite and thus causing the iron to be further oxidized and enriched to the point where it became the enriched iron ore of the weathered crust type.

After the remarkable increase of oxygen in the aerosphere and the formation of a protective shield of ozone above the aerosphere, the intensity of the radiation of the ultraviolet rays and various other cosmic rays, which is harmful to living things, was greatly weakened. Thus, the earth became a paradise for living things. The thriving propagation of the living things further intensified their light-absorbing action, which increased the amount of atmospheric oxygen and caused the scope and efficiency of the natural ore-selecting factory to increase also as time progressed.

The terrestrial climate alternates; in one period the air is cold and freezing with a blanket of white snow on the ground, while in another period it is humid and burning hot with thick forests everywhere. Under dissimilar climatic conditions, the types of weathering actions that occur are different also. Under cold or dry climate conditions, physical weathering, whose main effect is mechanical breakdown, is predominant, while under humid and hot climatic conditions, chemical weathering with a well developed leaching action is prevalent. The latter kind of climate is conducive to the formation of enriched iron ore of the weathered crust type. Some people have

estimated that under climatic conditions like those in the present day tropical zones of Africa, it would require only 100 years or even a shorter period to form iron ore of the weathered crust type 1 millimeter thick. Therefore, it would require only about 2 million years or less to form iron ore of this type that was 200 millimeters thick. Two million years is of course a very long time when compared to mankind's chronology of civilization, but it is only a brief and transitory scene in the earth's several billion years of developmental history. In the earth's history, there have been very many humid and hot periods, and because of this there have been a considerable number of historical opportunities for the formation of rich iron ore of the weathered crust type.

However, if these enormous natural ore-selecting factories had only "production sheds" and lacked "storage rooms," their products couldn't be stored. In fact, there were indeed some such situations where some rich iron ores of the weathered crust type, after being formed were finally destroyed by the subsequent actions of weathering and portage due to their lengthy period of exposure on the earth's surface. Only those ores which were formed and then covered by newer deposits were preserved in such a fashion that they could be of benefit to mankind.

The Glorious Perspective

It can be seen from the above that there are three basic geological conditions necessary for the formation of rich iron ore of the weathered crust type: (1) the presence of abundant strata of mineral sources, that is, under or near the ore there must be some ferrous quartzite from the late Archaean or early Proterozoic Eras; (2) the occurrence of one or more hot and humid periods of weathering and erosion in the course of geological history; and (3) the presence of a protective stratum from a later period to cover the already formed enriched iron ore of the weathered crust type.

China's great surface area is extensively situated in the huge adjoining region between the structural zones surrounding the Pacific Ocean and the Mediterranean Sea--the Himalayan structural zone. Such an advantageous structural position offers us the most varied geological conditions, including everything from the youngest island curves and the epicontinental seas to the oldest land of the Archaean and early Proterozoic Eras. All kinds of mineral products, regardless of the geological conditions under which they were produced, can be found in the great land of China. This is even more true with regard to the enriched iron ore of the weathered crust type. In geology there is a special name for our land, the "Chinese Table," which designates North China, South China, Northwest China, and the ancient segments of land of various sizes in the southern part of Northeast China. Widespread deposits of ferrous quartzite from the late Archaean and early Proterozoic Eras can be found in these ancient segments of of land. This explains how China indeed possesses sources of the rich iron ore from which the weathered crust type was formed.

According to geochronological research, China has had several important periods of formation of weathered crust since the early Proterozoic Era, and after these periods of weathering and erosion there have also been frequent large-scale intrusions of sea water or the development of inland lake basins. Because of this, the already formed rich iron ore of the weathered crust type was stored under the covering of the newer sedimentary strata.

All of this indicates that there is a most glorious prospect for the search for rich iron ore of the weathered crust type in China. There is a vast contingent of the working class laboring on the geological battle front of metallurgy. They are following Chairman Mao's directives concerning "The Expansion of the Mineral Industry" and using the class struggle as their principles to bitterly criticize the revisionist line, firmly grasp the revolution, and strive to look for and develop rich iron resources. They are calling forth the rich iron ore of the weathered crust type--the treasure that went through the hardships of weathering during those lengthy geological periods and now still lies dormant under the great land of China--to render service to the Chinese iron and steel industries.

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MODERN METHODS OF EXTRACTING THE OCEAN'S SECRETS

Peking K'O-HSUEH SHIH-YEN in Chinese No 11, 1976 pp 20-22

[Article by Liang Yuan-po [2733 0337 0590] and [Ho Han-wen 0149 3352 2429]: "Oceanic Exploration"]

[Text] Recently an exciting news article appeared in the paper: China successfully completed its first oceanic expedition in the Pacific. The two 10,000-ton class vessels which took part in this expedition, the "Hsiang Yang Hung-5" and the "Hsiang Yang Hung-11," and most of the scientific instruments were designed and constructed in this country. During the many weeks of exploration, research and investigations were carried out in hydrography, meteorology, chemistry, gravitation, geology, terrain of ocean basin as well as long distance communication and navigation. A large amount of valuable first-hand data were collected. This fact marked a new era in China's oceanic scientific research and exploration. It also represented another victory of Chairman Mao's revolutionary policy.

The Objectives of Oceanic Exploration

The ocean has traditionally been a testing ground for class struggle, production struggle, and scientific experiments. From the three major revolutionary movements, people have gradually accumulated knowledge about the ocean. Our ancestors had learned to extract fish and salt from the sea. They also learned to predict the weather over oceans for the sake of navigation safety, to determine the distribution of fish population and to avoid reefs by observing the color of water, current and the terrain and geological composition of shallow sea basin. At that time, only primitive methods were used. Since the Tang and Sung Dynasties, people had learned to determine a vessel's position by extracting and examining the soil samples from the sea basin and to determine the depth of ocean floor by using plumb-bobs. Later, as trade and contact with other people increased, the Chinese people realized the vastness of the seas, and began to form the concepts of seas and oceans.

In the past, the ocean seemed "mysterious" to some people and often resulted in misconceptions. This was partially due to the subjectivistic propaganda of the capitalists and partially due to the difficulties in oceanic exploration.

For example, before sonar was introduced for measuring ocean depth, the old plumb-bob method could not determine depths over 1,000 m.

Today, correct understanding of the ocean is the pre-requisite for developing, exploiting and overcoming the ocean. Because of the ambitions of the Soviet Union and the United States in controlling the ocean and extracting its resources, we have special incentives to accelerate our efforts in oceanic exploration.

Scope of Oceanic Exploration

Since the birth of new China, specially since the cultural revolution, significant advances were made in the field of oceanic research and exploration in China. The scientific expedition in the Pacific mentioned earlier was another giant step in long range oceanic exploration.

In general, modern oceanic exploration includes the following areas.

The most important area is the regular measurement of hydrographic and meteorological data. This involves the use of such scientific instruments as wind indicator, sonar detector, inverse water sampler, depth measuring device, rotary water current meter, or electro-magnetic current meter to measure and record wind velocity, wind direction, air pressure, air temperature, humidity, dew point, precipitation, and thermal radiation as well as ocean current velocity, direction, waves, water temperature, tides, electric conductivity, ph value, dissolved oxygen content, salt content, density, transparency and depth. These data provide the essential information for oceanic weather forecast, navigation and fishing forecast, etc. In the early days of oceanic exploration, the main effort was concerned with the safety and efficiency of navigation and with fishing activities. For example, investigation of the direction and intensity of ocean currents allows one to avoid sailing against strong currents and wasting a great deal of time and fuel. Hydrographic and meteorological data play even a more important role in modern warfare. For instance, during the famous Normandy landing of the second world war, the original plan of the allied nations was to initiate the landing on June 5, 1944. But hydrographic reports indicated that there would be large waves on that day. As a result, it was decided to postpone the landing to June 6. During the following several days, the entire landing operation was controlled by hourly hydrographic reports, so that the loading and unloading of personnel and equipment were carried out smoothly. This was an example of the effectiveness of quantitative wave forecast during an important battle. It can be predicted that in future warfares and in long range navigation, hydrographic forecast will play more important role.

In recent years, the development of submarine warfare and underwater communication motivated the observation and research of a series of oceanic physical phenomena such as internal waves, hydraulic jumps, scattering layers, and oceanic acoustic fields, light fields, electro-magnetic fields, as well as natural and artificial radiation fields. These efforts have significant

impact on the navigation safety and tracking of submarines, launching of underwater weapons, and underwater communication. Currently, acoustic channels have also been used successfully in long range under water communication.

Another area of oceanic exploration is the study of the distribution of live forms in the ocean. It has been estimated that there are 150,000 kinds of animals and a large number of plant lives in the ocean, many of which can be used for food or as raw materials for industries. During the past decade, oceanic fishing industries have not only explored new fishing territories on the ocean surface, but also expanded into deeper layers of the ocean. This requires a thorough understanding of the distribution habits, and movement of live forms in the ocean. Oceanic exploration data of this kind will have a significant impact on the development of China's fishing industry. In the future, we must use the information from oceanic exploration to establish a systematic plan for developing biological resources in the ocean, in much the same way as we develop agriculture on land.

In the area of oceanic chemistry, the traditional items of exploration include nutrients, elementary live forms, organic elements and compounds, and rare elements; in addition, recent emphasis has been concentrated in the protection of oceanic environment, the problem of oceanic pollution, and the investigation of the origin of oceanic radiation. During recent oceanic expeditions, automatic water quality analyzers have been widely used to monitor the level of chromium, sulfur dioxide, oil, and other pollutants in the ocean. In other expeditions, soil samples from the ocean basin are extracted and analyzed, because they usually provide good indications of the oceanic environment of the past, the amount of petroleum and natural gas reserve under the ocean, and the processes of rock formation and mineral formation at the bottom of the ocean.

The wide ocean basin is a focal point in the struggle against the super powers for monopolizing and exploiting ocean resources. A vast amount of undeveloped mineral resources are contained in various parts of the ocean basin. (See the article "Ocean Basin--A Treasure Trove of Minerals" in the March issue of this journal.) In particular, petroleum and natural gas have become a key issue in the exploration and development of resources from ocean basins. Other potentially promising resources include iron and manganese ore and other metals for the steel industry, and phosphorous and potassium fertilizers for agriculture. The "deep sea drilling plans" in recent years have verified that the earth crust layers beneath the ocean basin also contain valuable mineral resources.

The strategic value of the ocean basin and its importance in military and communications applications are also becoming more apparent. As a result of the rapid development of submarine activities and underwater construction, a considerable amount of attention is devoted to the understanding of the terrain of ocean basin, physical properties of ocean basin sediments, the basic characteristics of the ocean basin, and the stability of slope of the

ocean basin, etc. The accurate determination of the gravitational field in the ocean is essential in determining the shape of the earth and the sea level, in calculating the trajectory of artificial satellite, and in understanding the geological structure of the ocean basin and the earth crust. The determination of magnetic field in the ocean is of significant value in measuring the intensity of artificial earthquakes, in planting magnetic sea mines, in studying the geological structure of the ocean basin and in searching for petroleum resources. In modern oceanic explorations, various gravimeters and magnetometers are being used; in addition, the methods of refraction and reflection measurements in artificial earthquakes are also used in geophysical research.

The use of ocean floor for communications purposes is an important problem which recently received considerable attention. Due to the long submerge time of nuclear submarines, radio communication is difficult because propagation of electromagnetic waves in conducting sea water is severely limited. The use of acoustic communication is unsatisfactory in terms of security and information capacity. Recently, the idea of using the solid earth crust under the ocean as the propagation medium for electromagnetic waves was proposed. Preliminary analysis shows that this requires the presence of a high-resistance layer sandwiched between two low-resistance conducting layers in the ocean basin; the resistivity of this layer should be higher than 10^6 or 10^7 ohm-meter, and the attenuation should be less than 1 db/kilometer. With such a continuous wave guide, radio communication via the underwater earth crust can be realized. As a consequence, the study of ground current and propagation of electromagnetic waves in the ocean floor has rapidly become a subject of intensive research. This places new requirements on the on-site exploration of ocean floor sediments and the mechanism of sediment formation.

Other topics of oceanic research include position determination over ocean (including satellite position determination), long distance communication and navigation, placement of automatic observation buoys, planting and retrieval of oceanic instruments, as well as certain special topics such as ocean basin drilling and diving experiments, etc.

In addition to the multi-purpose project such as the recent Pacific expedition, there are often special-purpose expeditions which are carried out either by a single vessel or jointly by many vessels.

Advancing Toward the Ocean Both in Depth and in Range

The surface area of the ocean occupies 70.8 percent of the entire earth surface; it is more than twice the surface area of land. Recent oceanic explorations have resulted in many new discoveries which greatly improved our knowledge about the ocean.

For example, within the past 20 years, the giant Pacific equatorial subsurface current--the Cromwell current--was discovered. This was a major

discovery in dynamic oceanography. The fact that such an important current remained unknown reflects our limited understanding about the ocean. In recent years, on the basis of oceanic explorations, a theory about fluidic current was developed. This theory provides a better understanding about the dynamic phenomena in nature; it also has important practical applications.

Furthermore, recent explorations have reached a depth of 10,500 m to study the "ice thermal layer" and the "dark water region," and revealed the biological activities under high pressure conditions of over 1100 atmospheres or 1.1 tons per square cm. A whole family of oceanic biological life forms was discovered, thereby adding a new link to the evolution of biological science. Recent explorations of certain atmospheric phenomena over the ocean indicate that these may be caused by the internal and external terrestial radiation belt.

By using many new instruments, new discoveries have been made that were previously not possible. For instance, the discovery of the longest mountain ridge in the world--the Mid-ocean Ridge--was undoubtedly one of the most important discoveries in oceanic geology. Deep-sea drilling activities seemed to have found evidences to support the theories of ocean basin expansion and plate structure. But their correct interpretation requires further investigation. As the size of China's fleet of heavy vessels grows, these information from oceanic exploration will play a more and more important role in the future.

Therefore, the scope of modern oceanic exploration and research should include the atmosphere, the water and the earth crust, as well as the phenomena and laws of motion at the interfaces between the atmosphere and the ocean, and between the ocean and the earth crust. Consequently, we should be constantly advancing toward the ocean both in depth and in range.

Fig. 1 Hydrographic Workers Collecting Samples of Sea Water Under Hot Sun and 60° C Temperature

Fig. 2 Meteorological Technicians Inspecting the Antenna for Receiving Satellite Cloud Pictures

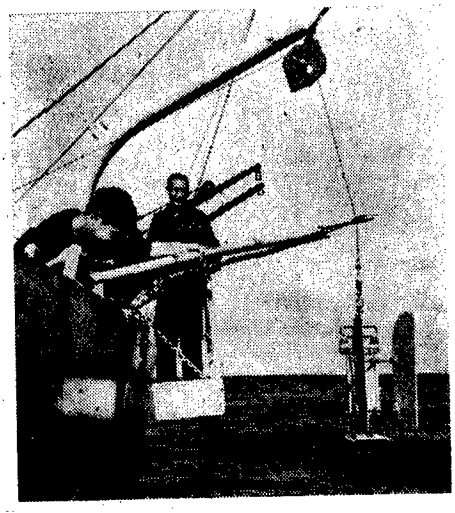

Fig. 3 Hydrographic Workers Operating an Ocean Current Meter With Attached Printer

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UNDERWATER PHOTOGRAPHY

Peking K'O-HSUEH SHIH-Yen in Chinese No 11, 1976 pp 16-17

[Article by Tsou Chi-pao [6760 4480 1405]]

[Text] Underwater photography is valuable in such applications as oceanic exploration, underwater construction, and salvage operations, etc. However, to obtain a useful picture is not an easy task because it depends on the underwater environment, the photographic equipment and the diving skills of the operators.

Effect of Underwater Environment

Water is a poor conductor of light; the absorption of light propagating in water is over 1000 times that propagating in air. The degree of transparency of water depends on both the absorption and scattering of light. The performance of a conventional underwater camera is determined by the transparency of water.

When light propagates from air into water, a portion is reflected at the water surface. The amount of reflection is related to the angle of incidence, which is the angle between the direction of light and the normal to the water surface. The larger the angle of incidence, the greater the reflection. At noon, the angle of incidence of sun light is less than 30°, and the reflected light is approximately 2 percent of the incident light. At sunrise or sunset, the amount of reflection can be as high as 100 percent, and the underwater illumination must rely on scattered light. When all other conditions are equal, the amount of reflection increases if waves are present over the water surface, and underwater photography becomes more difficult.

When light ray travels from air into water, it becomes refracted; the refractivity of water is approximately 1.333 times that of air. Therefore, the view of a camera lens is reduced to 3/4 its original value underwater. For example, a wide angle lens with a focal length of 35 mm is equivalent to a 50 mm standard lens underwater.

The water in rivers, lakes and oceans contains various amounts of salts, impurities, and micro-organisms. When light entering the water encounters these substances, it is deflected into all directions; this phenomenon is called scattering. The higher the salt content, the greater the scattering, and the poorer the transparency. In some waters, conventional photography techniques can no longer be used. From experience, it is known that due to forward and backward scattering effects, artificial illumination in turbid water is of little value.

Under water, the spatial vision of human beings also becomes altered. In particular, it is enlarged, displaced and distorted. For example, if the actual distance of an object is 4 m from the camera, it would appear to be only 3 m, and the image of the object would seem larger than its actual size (see Fig. 1). But since both the human eye and the camera lens are under water, the focusing can be done on the basis of what the eye senses. If automatic focusing device is not available, one can set the discance at 3/4 of the actual measured distance when taking picture of a close-in object. The sense of distortion of an object is caused by the difference in enlargement ratio of that portion of the object located on the normal plane (i.e., the plan perpendicular to the water surface) and the portion not on the normal plane. This situation should be avoided in underwater photography.

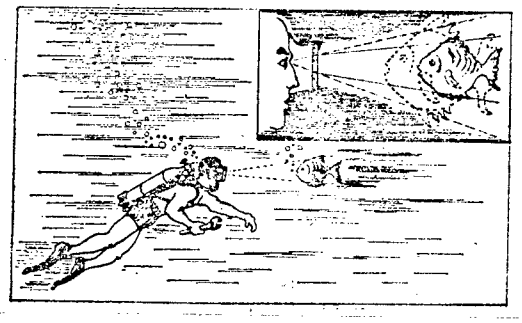


Fig. 1 Schematic Diagram Illustrating Changes in Human Vision Underwater

As light propagates into greater depth in the water, it is gradually absorbed in the order of longer to shorter wavelengths. Therefore, there is often a shortage of red light or near-red light in underwater photography. In the absence of artificial light source or light filtering, there is a lack of saturated red light even at a small distance from the surface, causing the entire picture to have a shade of blue and green. When black and white film is used in underwater photography, since it is insensitive to blue and green light, the time of exposure should be lengthened accordingly.

Underwater Cameras

The simplest underwater camera is a conventional camera enclosed in a sealed container. To facilitate underwater operation, the controls for focusing, adjusting the aperture, and the shutter mechanism are located on the outside of the container.

The "SHS-1" underwater camera is constructed by enclosing the domestic "seagull-4" camera in a water-proof and pressure-resistant aluminum alloy container. It is composed of the following parts: the camera, the container, the control mechanisms, the view finder, and the flash light (see Fig. 2).

An underwater camera must satisfy the following requirements:

1) It must be sealed against water leakage, particularly at the joints. Before use, the container should be tested in water to see if there are any air bubbles. One must be certain that there is no leaks before putting the camera into the container.

2) An underwater camera must be pressure tested. Since the pressure increases by 1 bar for every 10 m of depth in water, a structurally weak camera may be damaged or leaks may occur. In general, a metallic container does not have any problem, but a container made of organic glass or other materials should be tested for strength.

3) This weight of an underwater camera must be neither too light nor too heavy. If it is too light, the camera will tend to float and the operator will have difficulty in maintaining balance. If it is too heavy, the operator will have difficulty in maneuvering underwater. The underwater weight of a camera is the difference between the actual weight of the camera and the weight of water expelled by the camera. In general, it should be around 0.5 kg.

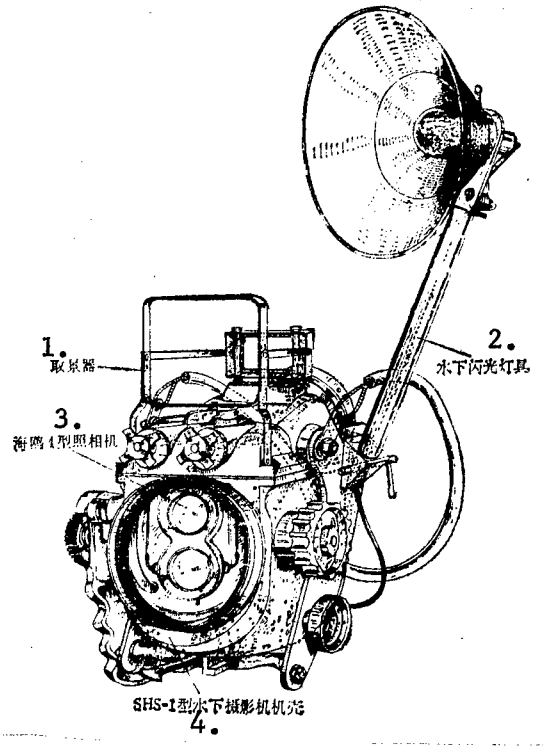
4) The material of the container must be light and corrosion resistant. Commonly used materials include aluminum alloys, organic glass, etc. After each use, particularly in sea water, the camera must be washed with fresh water and dried. The camera and the container should be stored separately. During operation and storage, one must be aware of the aging of rubber parts; damages and aging of rubber parts is a major cause for water leakage.

Underwater Operation

Diving skills are essential in underwater photography. Cameramen who are engaged in underwater photography should be checked by physicians for physical fitness in diving; and should receive the necessary training in diving skills.

The domestic "Hung-ch'ien 101" and "69-III" diving suits and equipment, which are structurally simple and easy to operate, are ideal for underwater photography. The "Hung-ch'ien 101" has a half mask with oral breathing; the "69-III" has a full mask with both oral and nasal breathing. In general, the "69-III" is easier to use than the "Hung-ch'ien 101". Regardless of the diving equipment and the water conditions, safety should be a major concern. Before diving, one should first investigate the surrounding conditions which include tides, water current, base terrain, water temperatures, the presence of dangerous creatures such as sharks, jellyfish, snakes, and take appropriate precautions. In complicated regions, operations should be carried out by two persons. The surface crew should watch the underwater activities very closely. The diving equipment should be carefully inspected before use; each part should be washed with fresh water and dried. Rubber parts should be kept from aging or from sticking together.

Quite often the divers may be distracted by the interesting scenery underwater and waste a considerable amount of time. This not only causes delays in the task of photography but may also result in accidents. Therefore, an underwater operator must always keep a cool head; in addition to seeking targets and selecting the best shots, he should also monitor the operations of the diving equipment and maintain constant contact with the surface. Movement underwater should be moderate to avoid damages to the camera or diving equipment. After completion of each assignment, one should take care in developing the pictures so the entire effort will not be wasted.



Key:

1. View finder
2. Underwater flash unit
3. Seagull-4 camera
4. Container

Fig. 2 Schematic Diagram of the SHS-1 Underwater Camera

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END